In the Claims

Please amend the claims as follows:

1. - 11. (cancelled)

12. (previously presented) A method of transporting multi-protocol datagrams over a point to point protocol (PPP) link through an asynchronous transport network, comprising the steps of:

encapsulating multi-protocol datagrams into payloads of asynchronous transport network mini-cells, each mini-cell having a header in addition to a payload, the header including a channel identifier (CID) field;

for each mini-cell, associating a PPP identifier of the datagram being encapsulated therein with the CID field of the mini-cell;

assembling said mini-cells into transport packets; and

transporting said packets over said point to point link through the asynchronous transport network.

13. (previously presented) A method as claimed in claim 12, wherein said PPP identifier identifies a PPP session.

14. (previously presented) A method as claimed in claim 12, wherein said PPP identifier identifies at least one PPP protocol within a PPP session.

15. (previously presented) A method as claimed in claim 12, wherein the PPP identifier identifies at least one session within a protocol of a PPP session.

16. (previously presented) A method as claimed in claim 12, wherein the step of associating a PPP identifier with the CID field of a mini-cell comprises inserting a PPP identifier into the CID field of the mini-cell.

17. (previously presented) A method as claimed in claim 16, wherein the PPP identifier of a multi-protocol datagram comprises two octets, a most significant octet and a least significant octet, and the method includes the step of inserting only the least significant octet of the PPP identifier into the CID field of a mini-cell.

18. (previously presented) A method as claimed in claim 17, wherein it includes the step of inserting the most significant octet of the PPP identifier in a first byte of the mini-cell payload adjacent the header and to indicating the presence of said most significant octet in said first byte of the mini-cell payload by making a value of a least significant bit (LSB) of the least significant octet to be "1".

19. (previously presented) A method as claimed in claim 18, wherein a LSB of the most significant octet of the PPP identifier is utilised as a bit parity check for error detection.

20. (previously presented) A method as claimed in claim 12, wherein the step of associating a PPP identifier with the CID field of a mini-cell comprises assigning a pre-allocated PPP identifier number to a respective mini-cell CID value and inserting the CID value into the CID field of the mini-cell.

21. (previously presented) A method as claimed in claim 20, wherein the step of assigning a pre-allocated PPP identifier number to a CID value and inserting said CID value into the CID field of a mini-cell includes obtaining the CID value corresponding to a pre-allocated PPP identifier number from a pre-configured table containing a list of pre-allocated PPP identifiers numbers and corresponding CID values.

22. (previously presented) A method as claimed in claim 20, wherein the step of assigning a pre-allocated PPP identifier number to a CID value and inserting said

CID value in the CID field of a mini-cell comprises assigning said pre-allocated PPP identifier number to said CID value on set-up of a PPP link, said assignment being carried out by a management function.

23. (previously presented) A method as claimed in claim 12, wherein the asynchronous transport network is an asynchronous transport mode (ATM) network and the mini-cells are ATM adaptation layer 2 (AAL2) mini-cells.

24. (previously presented) A method as claimed in claim 23, wherein it includes the step of mapping a PPP session to a single AAL2 channel.

25. (previously presented) A method as claimed in claim 23, wherein it includes the step of mapping at least one protocol of a PPP session to an AAL2 channel.

26. (previously presented) A method as claimed in claim 23, wherein it includes the step of mapping at least one session of a specified PPP protocol to an AAL2 channel.

27. (previously presented) A method as claimed in claim 23, wherein it includes the step of mapping several PPP sessions to a same AAL2 channel.

28. (previously presented) A method as claimed in claim 23, wherein it includes the step of mapping several protocols from different PPP sessions to a same AAL2 channel.

29. (previously presented) A method as claimed in claim 28, wherein the several protocols from different PPP sessions comprise the same protocol from each of the different PPP sessions.

30. (previously presented) A method as claimed in claim 23, wherein it includes the step of mapping at least one session of a specified PPP protocol of several PPP sessions to a same AAL2 channel.

31. (previously presented) A method as claimed in claim 23 wherein it includes a mapping step, said mapping step comprising a combination of any of:

mapping a PPP session to a single AAL2 channel;

mapping at least one protocol of a PPP session to an AAL2 channel;

mapping at least one session of a specified PPP protocol to an AAL2 channel;

mapping several PPP sessions to a same AAL2 channel;

mapping several protocols from different PPP sessions to a same AAL2 channel; and

mapping at least one session of a specified PPP protocol of several PPP sessions to a same AAL2 channel;

wherein said AAL2 channels comprise an ATM virtual circuit connection (VCC).

32. (previously presented) A method as claimed in any one of claims 23 to 31, wherein it includes the step of scheduling transport of ATM mini-cells of said AAL2 channels according to the type of PPP datagrams encapsulated in the mini-cells being transported in respective AAL2 channels.

33. (previously presented) A method as claimed in claim 23 wherein it includes a mapping step, said mapping step comprising one of:

mapping a PPP session to a single ATM virtual channel connection (VCC);

mapping at least one protocol of a PPP session to an ATM VCC;

mapping at least one session of a specified PPP protocol to an ATM VCC

mapping several PPP sessions to a same ATM VCC;

mapping several protocols from different PPP sessions to a same ATM VCC; and

mapping at least one session of a specified PPP protocol of several PPP sessions to a same ATM VCC.

34. (previously presented) A method as claimed 23, wherein it includes the step of multiplexing mini-cells into an ATM virtual channel connection (VCC).

35. (currently amended) A method as claimed in claim 34, wherein said step of multiplexing mini-cells into an ATM virtual channel connection (VCC) includes ~~multiplexed~~ multiplexing mini-cells ~~comprise~~ encapsulating PPP ~~traffic data~~ datagrams and ~~traffic data from a number of non-PPP sources~~ mini-cells encapsulating non-PPP datagrams into the ATM VCC.

36. (previously presented) A method as claimed in claim 35, wherein said PPP traffic data comprises voice traffic data.

37. (previously presented) A method as claimed in claim 23, wherein the multi-protocol datagrams are encapsulated into mini-cells of variable lengths.

38. (previously presented) A method as claimed in claim 23, wherein multi-protocol datagrams comprising delay sensitive traffic are encapsulated into mini-cells comprising a first channel of an ATM virtual circuit (VC) and datagrams comprising delay insensitive traffic are encapsulated into mini-cells comprising a second channel of said ATM VC.

39. (previously presented) A method as claimed in claim 23, wherein said step of assembling mini-cells into transport packets comprises assembling mini-cells into ATM packets.

40. (previously presented) A method as claimed in claim 23, wherein said step of assembling mini-cells into transport packets comprises assembling mini-cells directly into MPEG-TS frames.

41. (previously presented) A method as claimed in claim 23, wherein said step of assembling mini-cells into transport packets comprises assembling mini-cells directly into TDMA time slots.

42. (previously presented) A method as claimed in claim 12, wherein it includes the step of encoding a flag in a user to user information (UUI) field of a mini-cell to indicate whether an encapsulated datagram extends into a payload of a next mini-cell.

43. (previously presented) A method as claimed in claim 12, wherein the step of encapsulating a datagram in a mini-cell includes inserting the PPP identifier, a payload of the datagram and an optional trailer into the payload of the mini-cell.

44. (previously presented) A method of encapsulating point to point protocol (PPP) datagrams into payloads of asynchronous transport network mini-cells, each mini-cell having a header in addition to a payload, the header including a channel identifier (CID) field, the method comprising the steps of:

encapsulating the PPP datagrams into the payloads of the asynchronous transport network mini-cells;

for each mini-cell, associating a PPP identifier of the datagram being encapsulated therein with the CID field of the mini-cell; and

assembling said mini-cells into transport packets.

45. (previously presented) A method as claimed in claim 44, wherein said PPP identifier identifies a PPP session.

46. (previously presented) A method as claimed in claim 44, wherein said PPP identifier identifies at least one PPP protocol within a PPP session.

47. (previously presented) A method as claimed in claim 44, wherein the PPP identifier identifies at least one session within a protocol of a PPP session.

48. (previously presented) A method as claimed in claim 44, wherein the step of associating a PPP identifier with the CID field of a mini-cell comprises inserting a PPP identifier into the CID field of the mini-cell.

49. (previously presented) A method as claimed in claim 48, wherein the PPP identifier of a multi-protocol datagram comprises two octets, a most significant octet and a least significant octet, and the method includes the step of inserting only the least significant octet of the PPP identifier into the CID field of a mini-cell.

50. (previously presented) A method as claimed in claim 49, wherein it includes the step of inserting the most significant octet of the PPP identifier in a first byte of the mini-cell payload adjacent the header and to indicating the presence of said most significant octet in said first byte of the mini-cell payload by making a value of a least significant bit (LSB) of the least significant octet to be "1".

51. (previously presented) A method as claimed in claim 50, wherein a LSB of the most significant octet of the PPP identifier is utilised as a bit parity check for error detection.

52. (previously presented) A method as claimed in claim 44, wherein the step of associating a PPP identifier with the CID field of a mini-cell comprises assigning a pre-allocated PPP identifier number to a respective mini-cell CID value and inserting the CID value into the CID field of the mini-cell.

53. (previously presented) A method as claimed in claim 52, wherein the step of assigning a pre-allocated PPP identifier number to a CID value and inserting said CID value into the CID field of a mini-cell includes obtaining the CID value corresponding to a pre-allocated PPP identifier number from a pre-configured table containing a list of pre-allocated PPP identifiers numbers and corresponding CID values.

54. (previously presented) A method as claimed in claim 52, wherein the step of assigning a pre-allocated PPP identifier number to a CID value and inserting said CID value in the CID field of a mini-cell comprises assigning said pre-allocated PPP identifier number to said CID value on set-up of a PPP link, said assignment being carried out by a management function.

55. (previously presented) A method as claimed in claim 44, wherein the asynchronous transport network is an asynchronous transport mode (ATM) network and the mini-cells are ATM adaptation layer 2 (AAL2) mini-cells.

56. (previously presented) A method as claimed in claim 55, wherein it includes the step of mapping a PPP session to a single AAL2 channel.

57. (previously presented) A method as claimed in claim 55, wherein it includes the step of mapping at least one protocol of a PPP session to an AAL2 channel.

58. (previously presented) A method as claimed in claim 55, wherein it includes the step of mapping at least one session of a specified PPP protocol to an AAL2 channel.

59. (previously presented) A method as claimed in claim 55, wherein it includes the step of mapping several PPP sessions to a same AAL2 channel.

60. (previously presented) A method as claimed in claim 55, wherein it includes the step of mapping several protocols from different PPP sessions to a same AAL2 channel.

61. (previously presented) A method as claimed in claim 60, wherein the several protocols from different PPP sessions comprise the same protocol from each of the different PPP sessions.

62. (previously presented) A method as claimed in claim 55, wherein it includes the step of mapping at least one session of a specified PPP protocol of several PPP sessions to a same AAL2 channel.

63. (previously presented) A method as claimed in claim 55 wherein it includes a mapping step, said mapping step comprising a combination of any of:

mapping a PPP session to a single AAL2 channel;

mapping at least one protocol of a PPP session to an AAL2 channel;

mapping at least one session of a specified PPP protocol to an AAL2 channel;

mapping several PPP sessions to a same AAL2 channel;

mapping several protocols from different PPP sessions to a same AAL2 channel; and

mapping at least one session of a specified PPP protocol of several PPP sessions to a same AAL2 channel;

wherein said AAL2 channels comprise an ATM virtual circuit connection (VCC).

64. (previously presented) A method as claimed in any one of claims 55 to 63, wherein it includes the step of scheduling transport of ATM mini-cells of said AAL2 channels according to the type of PPP datagrams encapsulated in the mini-cells being transported in respective AAL2 channels.

65. (previously presented) A method as claimed in claim 55 wherein it includes a mapping step, said mapping step comprising one of:

mapping a PPP session to a single ATM virtual channel connection (VCC);

mapping at least one protocol of a PPP session to an ATM VCC;

mapping at least one session of a specified PPP protocol to an ATM VCC

mapping several PPP sessions to a same ATM VCC;

mapping several protocols from different PPP sessions to a same ATM VCC; and

mapping at least one session of a specified PPP protocol of several PPP sessions to a same ATM VCC.

66. (previously presented) A method as claimed 55, wherein it includes the step of multiplexing mini-cells into an ATM virtual channel connection (VCC).

67. (currently amended) A method as claimed in claim 66, wherein said step of multiplexing mini-cells into an ATM virtual channel connection (VCC) includes ~~multiplexed~~ multiplexing mini-cells ~~comprise~~ encapsulating PPP ~~traffic data~~ datagrams and ~~traffic data from a number of non-PPP sources~~ mini-cells encapsulating non-PPP datagrams into the ATM VCC.

68. (previously presented) A method as claimed in claim 67, wherein said PPP traffic data comprises voice traffic data.

69. (previously presented) A method as claimed in claim 55, wherein the multi-protocol datagrams are encapsulated into mini-cells of variable lengths.

70. (previously presented) A method as claimed in claim 55, wherein multi-protocol datagrams comprising delay sensitive traffic are encapsulated into mini-cells comprising a first channel of an ATM virtual circuit (VC) and datagrams comprising

delay insensitive traffic are encapsulated into mini-cells comprising a second channel of said ATM VC.

71. (previously presented) A method as claimed in claim 55, wherein said step of assembling mini-cells into transport packets comprises assembling mini-cells into ATM packets.

72. (previously presented) A method as claimed in claim 44, wherein it includes the step of encoding a flag in a user to user information (UUI) field of a mini-cell to indicate whether an encapsulated datagram extends into a payload of a next mini-cell.

73. (previously presented) A method as claimed in claim 44, wherein the step of encapsulating a datagram in a mini-cell includes inserting the PPP identifier, a payload of the datagram and an optional trailer into the payload of the mini-cell.

74. (previously presented) Apparatus for transporting multi-protocol datagrams over a point to point protocol (PPP) link through an asynchronous transport network, comprising:

means for encapsulating multi-protocol datagrams into payloads of asynchronous transport network mini-cells, each mini-cell having a header in addition to a payload, the header including a channel identifier (CID) field;

means for associating a PPP identifier of a datagram being encapsulated into a mini-cell with the CID field of the mini-cell;

means for assembling said mini-cells into transport packets; and

means transporting said packets over said point to point link through the asynchronous transport network.

75. (previously presented) A transport apparatus as claimed in claim 74, wherein said means for associating a PPP identifier with the CID field of a mini-cell is arranged to insert a PPP identifier into the CID field of the mini-cell.

76. (previously presented) A transport apparatus as claimed in claim 75, wherein the means for associating a PPP identifier with the CID field of a mini-cell is arranged to insert only a least significant octet of a two octet PPP identifier into the CID field of a mini-cell.

77. (previously presented) A transport apparatus as claimed in claim 76, wherein the means for associating a PPP identifier with the CID field of a mini-cell is arranged to insert a most significant octet of the PPP identifier in a first byte of the mini-cell payload adjacent the header and to indicating the presence of said most significant octet in said first byte of the mini-cell payload by making a value of a least significant bit (LSB) of the least significant octet to be "1".

78. (previously presented) A transport apparatus as claimed in claim 74, wherein the means for associating a PPP identifier with the CID field of a mini-cell is arranged to assign a pre-allocated PPP identifier number to a respective mini-cell CID value and to insert the CID value into the CID field of the mini-cell.

79. (previously presented) A transport apparatus as claimed in claim 74, wherein the asynchronous transport network is an asynchronous transport mode (ATM) network and the mini-cells are ATM adaptation layer 2 (AAL2) mini-cells.

80. (previously presented) A transport apparatus as claimed in claim 79, wherein it includes means for scheduling transport of ATM mini-cells of said AAL2 channels according to the type of PPP datagrams encapsulated in the mini-cells being transported in respective AAL2 channels.

81. (previously presented) A transport apparatus as claimed 79, wherein it includes means for multiplexing mini-cells into an ATM virtual channel connection (VCC).

82. (currently amended) A transport apparatus as claimed in claim 81, wherein said means for multiplexing mini-cells into an ATM virtual channel connection (VCC) is arranged to multiplex mini-cells encapsulating PPP ~~traffic data~~ datagrams and ~~traffic data from a number of non-PPP sources~~ mini-cells encapsulating non-PPP datagrams into the ATM VCC.

83. (previously presented) A transport apparatus as claimed in claim 79, wherein the means for encapsulating datagrams into mini-cells is arranged to encapsulate datagrams comprising delay sensitive traffic into mini-cells comprising a first channel of an ATM virtual circuit (VC) and encapsulate datagrams comprising delay insensitive traffic into mini-cells comprising a second channel of said ATM VC.

84. (previously presented) A transport apparatus as claimed in claim 79, wherein said means for assembling mini-cells into transport packets is arranged to assemble mini-cells into ATM packets.

85. (previously presented) A transport apparatus as claimed in claim 79, wherein said means for assembling mini-cells into transport packets is arranged to assemble mini-cells directly into MPEG-TS frames.

86. (previously presented) A transport apparatus as claimed in claim 79, wherein said means for assembling mini-cells into transport packets is arranged to assemble mini-cells directly into TDMA time slots.

87. (previously presented) Apparatus for encapsulating point to point protocol (PPP) datagrams into payloads of asynchronous transport network mini-cells, each mini-

cell having a header in addition to a payload, the header including a channel identifier (CID) field, the apparatus comprising:

means for encapsulating the PPP datagrams into the payloads of the asynchronous transport network mini-cells

means for associating a PPP identifier of a datagram being encapsulated into a mini-cell with the CID field of the mini-cell; and

means for assembling said mini-cells into transport packets.

88. (previously presented) An apparatus as claimed in claim 87, wherein said means for associating a PPP identifier with the CID field of a mini-cell is arranged to insert a PPP identifier into the CID field of the mini-cell.

89. (previously presented) An apparatus as claimed in claim 87, wherein the means for associating a PPP identifier with the CID field of a mini-cell is arranged to insert only a least significant octet of a two octet PPP identifier into the CID field of a mini-cell.

90. (previously presented) An apparatus as claimed in claim 89, wherein the means for associating a PPP identifier with the CID field of a mini-cell is arranged to insert a most significant octet of the PPP identifier in a first byte of the mini-cell payload adjacent the header and to indicating the presence of said most significant octet in said first byte of the mini-cell payload by making a value of a least significant bit (LSB) of the least significant octet to be "1".

91. (previously presented) An apparatus as claimed in claim 87, wherein the means for associating a PPP identifier with the CID field of a mini-cell is arranged to assign a pre-allocated PPP identifier number to a respective mini-cell CID value and to insert the CID value into the CID field of the mini-cell.

92. (previously presented) An apparatus as claimed in claim 87, wherein the asynchronous transport network is an asynchronous transport mode (ATM) network and the mini-cells are ATM adaptation layer 2 (AAL2) mini-cells.

93. (previously presented) An apparatus as claimed in claim 92, wherein it includes means for scheduling transport of ATM mini-cells of said AAL2 channels according to the type of PPP datagrams encapsulated in the mini-cells being transported in respective AAL2 channels.

94. (previously presented) An apparatus as claimed 92, wherein it includes means for multiplexing mini-cells into an ATM virtual channel connection (VCC).

95. (currently amended) An apparatus as claimed in claim 94, wherein said means for multiplexing mini-cells into an ATM virtual channel connection (VCC) is arranged to multiplex mini-cells encapsulating PPP ~~traffic data~~ datagrams and ~~traffic data from a number of non-PPP sources~~ mini-cells encapsulating non-PPP datagrams into the ATM VCC.

96. (previously presented) An apparatus as claimed in claim 92, wherein the means for encapsulating datagrams into mini-cells is arranged to encapsulate datagrams comprising delay sensitive traffic into mini-cells comprising a first channel of an ATM virtual circuit (VC) and encapsulate datagrams comprising delay insensitive traffic into mini-cells comprising a second channel of said ATM VC.

97. (previously presented) An apparatus as claimed in claim 92, wherein said means for assembling mini-cells into transport packets is arranged to assemble mini-cells into ATM packets.

98. (previously presented) An apparatus as claimed in claim 92, wherein said means for assembling mini-cells into transport packets is arranged to assemble mini-cells directly into MPEG-TS frames.

99. (previously presented) An apparatus as claimed in claim 92, wherein said means for assembling mini-cells into transport packets is arranged to assemble mini-cells directly into TDMA time slots.